Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	
Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands	WT Docket No. 03-66 RM-10586
Part 1 of the Commission's Rules – Further Competitive Bidding Procedures	WT Docket No. 03-67
Amendment of Parts 21 and 74 to Enable Multipoint Distribution Service and the Instructional Television Fixed Service; Amendment of Parts 21 and 74 to Engage in Fixed Two-Way Transmissions	MM Docket No. 97-217
Amendment of Parts 21 and 74 of the Commission's Rules with Regard to Licensing in the Multipoint Distribution Service and in the Instructional Television Fixed Service for the Gulf of Mexico	WT Docket No. 02-68 RM-9718

COMMENTS OF MOTOROLA, INC.

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Summary

The present configuration of the 2500-2690 MHz band, with interleaved Instructional Television Fixed Service ("ITFS") and Multipoint Distribution Service ("MDS") bands, prevents efficient utilization of this spectrum. Motorola strongly recommends reconfiguration of the band and the adoption of a coherent licensing structure that will allow the deployment of new services in this spectrum, including advanced wireless services ("AWS") and International Mobile Telecommunications-2000 ("IMT-2000") services. Motorola proposes a number of key features that should be incorporated into new licensing rules for the band:

Appropriate Power Limits: There should be appropriate limits on signal strengths to facilitate the migration to lower power operations in the band, recognizing the need to accommodate incumbent services.

Contiguous Spectrum Blocks: The band should be reconfigured to eliminate interleaved spectrum and create contiguous spectrum blocks that allow more efficient use of the 2500-2690 MHz band.

Accommodation of FDD Operations: The new licensing rules should accommodate frequency division duplex ("FDD") systems, given FDD's well-established suitability for provision of wide area mobile services. If paired spectrum is designated for FDD operations, the licensing rules should adopt the conventional duplex arrangement with subscriber-to-base communications in the lower band and base-to-subscriber communications in the upper band.

Adequate Guard bands Between FDD and TDD Systems: Guard bands on the order of 10 MHz would be needed between FDD and TDD systems and between uncoordinated TDD systems to prevent harmful interference.

Harmonization with Global Use of the 2500-2690 MHz Band: The Commission should strive to be consistent with one of the spectrum scenarios being considered by Working Party 8F ("WP 8F") of the International Telecommunication Union ("ITU") to implement deployment of IMT-2000 services in the 2500-2690 MHz band.

Geographic Area Licensing: Geographic license areas are essential to facilitate deployment of mobile operations in the band. The band should not be made available for unlicensed use.

Open Eligibility: Motorola supports the establishment of open eligibility licensing rules that encourage increased utilization of the band.

Motorola also opposes allowing unlicensed operations in the 2500-2690 MHz band by means of an "underlay" licensing scheme as such an approach would create new sources of interference and a more uncertain interference environment at the expense of licensees in the band. Instead, the Commission's objective should be to minimize the potential for interference in the 2500-2690 MHz band and thus to promote the deployment of new, spectrally efficient operations in this spectrum.

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COMMENTS OF MOTOROLA, INC.

Motorola, Inc. ("Motorola") hereby submits these comments on the *Notice of Proposed Rulemaking* ("*NPRM*") in the above-captioned proceeding.[1] Motorola strongly supports the Commission's efforts to conduct a comprehensive examination of the rules and policies governing the 2500-2690 MHz band in response to the white paper jointly filed by the Wireless

[1] Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands, WT Docket No. 03-66, *Notice of Proposed Rule Making and Memorandum Opinion and Order*, FCC 03-56, 18 FCC Rcd 6722 (rel. Apr. 2, 2003) ("*NPRM*").

Communications Association International, Inc., the National ITFS Association, and the Catholic Television Network (the "Coalition").[2] The 2500-2690 MHz spectrum has great potential to support innovation and investment in advanced wireless services ("AWS"), particularly mobile broadband and data services. While fully considering the needs of incumbent users, the Commission should adopt coherent licensing rules that facilitate deployment of new services, including mobile uses, provide certainty for the deployment of commercial services, and allow for the most efficient use of the 2500-2690 MHz band and realization of the full potential of this spectrum.

I. INTRODUCTION

Motorola commends the Commission for undertaking this comprehensive review of the 2500-2690 MHz band. A more coherent licensing structure is essential to maximize the efficient use of this band. As the *NPRM* recognizes, the present configuration of the band, with interleaved Instructional Television Fixed Service ("ITFS") and Multipoint Distribution Service ("MDS") bands,[3] prevents efficient utilization of this spectrum. The existence of high power operations throughout the band limits widespread and effective use of this spectrum for lower power cellularized operations. Furthermore, the existing site-based licensing scheme place enormous burdens on licensees seeking to deploy lower power cellularized systems. These features of the existing licensing rules have "made it nearly impossible to provide mobile services" in the band and has created strong support for a "revamping" of the band.[4]

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[2] A Proposal for Revising the MDS and ITFS Regulatory Regime, submitted by the Wireless Communications Association International, Inc., the National ITFS Association, and the Catholic Television Network, RM-10586 (filed Oct. 7, 2002) ("Coalition Proposal").

[3] In these comments, we use the term MDS to refer to both MDS and Multichannel Multipoint Distribution Service ("MMDS").

[4] *NPRM* ¶ 36.

Motorola strongly recommends reconfiguration of the 2500-2690 MHz band and the adoption of a coherent licensing structure that will allow the deployment of mobile operations in this spectrum, including AWS and International Mobile Telecommunications-2000 ("IMT-2000") services. To further the Commission's efforts to reconfigure the 2500-2690 MHz band, Motorola proposes a number of key features that should be incorporated into new licensing rules for the band:

- ***Appropriate Power Limits***: There should be appropriate limits on signal strengths to facilitate the migration to lower power operations in the band, recognizing the need to accommodate incumbent services.

- ***Contiguous Spectrum Blocks***: The band should be reconfigured to eliminate interleaved spectrum and create contiguous spectrum blocks that allow more efficient use of the 2500-2690 MHz band.

- ***Accommodation of FDD Operations***: The new licensing rules should accommodate frequency division duplex ("FDD") systems, given FDD's well-established suitability for provision of wide area mobile services. If paired spectrum is designated for FDD operations, the licensing rules should adopt the conventional duplex arrangement with subscriber-to-base communications in the lower band and base-to-subscriber communications in the upper band.

- ***Adequate Guard bands Between FDD and TDD Systems***: Guard bands on the order of 10 MHz would be needed between FDD and time division duplex ("TDD") systems and between uncoordinated TDD systems to prevent harmful interference.

- ***Harmonization with Global Use of the 2500-2690 MHz Band***: The new band plan should harmonize with planned global use of this spectrum. In particular, the Commission should strive to ensure that the band plan is consistent with one of the spectrum scenarios being considered by Working Party 8F ("WP 8F") of the International Telecommunication Union ("ITU") to implement deployment of IMT-2000 services in the 2500-2690 MHz band.

- ***Geographic Area Licensing***: Geographic license areas are essential to facilitate deployment of mobile operations in the band. The band should not be made available for unlicensed use.

- ***Open Eligibility***: Motorola supports the establishment of open eligibility licensing rules that encourage increased utilization of the band.

Motorola also opposes allowing unlicensed operations in the 2500-2690 MHz band by means of an "underlay" licensing scheme. Such an approach would create new sources of interference and a more uncertain interference environment at the expense of licensees in the band. Instead, the Commission's objective should be to minimize the potential for interference in the 2500-2690 MHz band and thus to promote the deployment of new, spectrally efficient operations in this spectrum.

II. RECONFIGURATION OF THE 2500-2690 MHZ SPECTRUM IS NECESSARY TO ALLOW THE DEVELOPMENT AND DEPLOYMENT OF NEW SERVICES, INCLUDING MOBILE BROADBAND SERVICES

A. The Existing Licensing Rules Prevent Efficient Utilization of the 2500-2690 MHz Band

While the Commission has previously noted that ITFS and MDS licensees have made extensive use of the 2500-2690 MHz band, the *NPRM* recognizes that this spectrum remains "underutilized."[5] The Commission recognized this fact when it decided to add a mobile allocation to this band "in order to provide additional flexibility for use of this spectrum and promote more efficient use."[6] Furthermore, the *NPRM* explicitly recognizes that further actions are necessary "to encourag[e] licensees in the 2500-2690 MHz band to migrate to more technologically and economically efficient uses of the spectrum."[7] The catalog of changes to the ITFS and MDS licensing rules over the past twenty years demonstrate the Commission's

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5 *NPRM* ¶ 116.

6 Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems, ET Docket No. 00-258, *First Report and Order and Memorandum Opinion and Order*, 16 FCC Rcd 17222, ¶ 19 (2001) ("*Mobile Report and Order*").

7 *NPRM* ¶ 36. This is also reflected in the Commission's request for comments on ways to ensure "efficient use of the MMDS and ITFS spectrum." *Id*. ¶ 116.

efforts to achieving more efficient use of this spectrum.[8] Over the years, the Commission has loosened the educational programming requirements for ITFS licensees, so that now licensees are permitted to lease up to 95% of their channel capacity for non-educational programming.[9] These rule changes reflect the fact that there is limited utilization of this spectrum for educational programming.

MDS spectrum in the 2500-2690 MHz band is also currently underutilized. As the *NPRM* notes, MDS subscribership levels have fallen significantly in the most recent period for which data is available.[10] Between June 2001 and June 2002, the number of MDS subscribers in the U.S. fell from 700,00 to 490,000, a decline of thirty percent.[11] Thus, although the top four MDS licensees potentially can serve more than 75% of the U.S. population,[12] the entire MDS industry provides service to less than 0.2% of the population. Moreover, the future video service operations of the three largest MDS licensees are uncertain. WorldCom, the largest MDS licensee, announced plans to discontinue or divest its fixed wireless operations in July 2002.[13] The company is currently under bankruptcy protection and recently received approval from the bankruptcy court to sell its wireless assets and licenses to Nextel.[14] Sprint, the second largest MDS licensee, has curtailed deployment of its Broadband Direct service and is not

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8 *See id*. ¶¶ 10-17, 109.

9 *See id*. ¶ 113.

10 *See id*. ¶ 27.

11 *See* Annual Assessment of the Status of Competition in the Market for Delivery of Video Programming, MB Docket No. 02-145, Ninth Annual Report, 17 FCC Rcd 26901, ¶ 74 & App. B (2002).

12 *See id*. ¶ 74.

13 Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, WT Docket No. 02-379, Eighth Report, FCC 03-150, App. A at A-3 (rel. July 14, 2003) (“*8th CMRS Competition Report*”).

14 *See* Nextel Communications, Inc., Form 10-Q, Aug. 8, 2003, at 17; Heather Weaver, *Judge OKs Nextel Purchase of WorldCom’s Fixed-Wireless Assets*, RCR Wireless News, July 25, 2003. The transfer of the licenses is subject to the Commission’s approval.

accepting new customers.[15] Nucentrix Broadband Networks, the third largest licensee, has recently announced that it is exploring the sale of its assets, possibly under bankruptcy protection.[16] It is clear, therefore, that MDS licensees are struggling under the existing licensing rules.

B. The 2500-2690 MHz Band Is Well Suited to Meet the High Demand for Broadband Services

The demand for broadband services, including mobile services has continued to rise, even in the wake of an economic recession and despite a sluggish economic recovery. According to the Cellular Telecommunications & Internet Association ("CTIA"), there are now more than 149 million mobile subscribers in the United States, equivalent to a penetration rate of more than 50%.[17] Minutes of use per subscriber also "continued a rapid rise" in 2002 to 492 minutes.[18]

The growth in demand for mobile data services is even more significant. According to a March 2003 Morgan Stanley report, there were 11.9 million subscribers to mobile data services at the end of 2002, a 57% increase from 7.6 million subscribers at the end of 2001.[19] The number of mobile Internet users in the United States is also growing rapidly.[20] This growth can be expected to continue as third generation ("3G") mobile broadband services

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15 *See NPRM* ¶ 27; http://www.sprintbroadband.com/statusFAQ.html.

16 Nucentrix Broadband Networks, Inc., Form 8-K, Aug. 14, 2003, Exhibit 99.1, at http://www.sec.gov.

17 *See* http://www.wow-com.com (last visited Sept. 8, 2003).

18 *See 8th CMRS Competition Report* ¶ 64.

19 *See 8th CMRS Competition Report* ¶ 124 (citing Luiz Carvalho *et al*., Morgan Stanley, *A Look at Wireless Data*, at 3 (Mar. 2, 2003)).

20 *See NPRM* ¶ 37.

become increasingly available, mirroring the rapid rise in the number of subscribers for wireline broadband Internet services.

The 2500-2690 MHz spectrum is well suited for mobile operations, including mobile broadband services. It is well established that the propagation characteristics of spectrum below 3 GHz are particularly suitable for wide area mobile services. The ITU recognized this fact when it identified additional frequency bands for IMT-2000, including the 2500-2690 MHz band, at the World Radiocommunication Conference in Istanbul, noting that IMT-2000 applications "require spectrum below 3 GHz."[21] The Commission accordingly has limited its search for appropriate spectrum for AWS to frequencies below 3 GHz.[22]

Moreover, most mobile MDS and ITFS licensees would like to deploy low power cellularized two-way systems that would support mobile uses in the 2500-2690 MHz band and allow improved spectral efficiency of their operations.[23] Indeed, the *NPRM* states that the Commission "anticipate[s] that this spectrum will be largely used as a mobile voice and data service."[24] Motorola agrees that the suitability of this spectrum for the delivery of broadband services, including mobile uses is likely to lead to significant use of this band for a range of services, provided that the Commission adopts a more coherent licensing structure that allows mobile operations to be a viable option in this spectrum.

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21 Final Acts of the World Radiocommunication Conference (Istanbul 2000), Resolution 223 § o.

22 *See, e.g.*, Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems, ET Docket No. 00-258, *Notice of Proposed Rule Making and Order*, 16 FCC Rcd 596, ¶ 1 (2001).

23 *See NPRM* ¶ 26.

24 *Id.* ¶ 123.

C. Reconfiguration of the 2500-2690 MHz Band to Accommodate New Services, Including IMT-2000 Services, Would Further Global Harmonization in this Spectrum

Reconfiguration of the 2500-2690 MHz band to allow the successful deployment of new services, including IMT-2000 services, would enable harmonization with future global uses of this spectrum. When the Commission added a mobile allocation to the band in 2001, it asserted that this action "will permit the possibility of long-term harmonized use of the band" for IMT-2000 services.[25] It noted, however, that service rules for the 2500-2690 MHz band would need to be reconfigured to permit mobile operations.[26] Motorola agrees that reconfiguration of the 2500-2690 MHz band has the potential to achieve significant harmonization benefits in the longer term, particularly if the band plan in the United States is consistent with one of the scenarios being considered by the ITU. The benefits that would flow from such harmonization include:

- ***Manufacturing Economies of Scale***: Consistent licensing rules for the 2500-2690 MHz band would enable manufacturers are able to produce equipment that can be used in both U.S. and international markets and thus achieve economies of scale, which in turn would lead to reduced equipment costs. Lower equipment costs would directly benefit consumers and make equipment affordable for a wider base of customers, encouraging more widespread deployment and the provision of services to a broader cross-section of Americans.

- ***Global Roaming***: Harmonization of the 2500-2690 MHz band plan and licensing rules with international markets would allow U.S. consumers to use their mobile phones when traveling abroad, which is likely to encourage increased consumer use of mobile wireless devices.

- ***Accelerated Time-to-Market for New Products***: U.S. consumers will obtain earlier access to new products because harmonized spectrum would reduce the number of design issues, expedite the development of equipment standards, and allow manufacturers to focus research and development on products for global frequency bands, rather than separate product lines for the U.S. and overseas markets.

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[25] *Mobile Report and Order* ¶ 23.

[26] *See id*. ¶ 30.

- ***Facilitation of Multi-Mode Equipment***: Harmonized global spectrum would facilitate the design and development of multi-mode equipment that would operate in the 2500-2690 MHz spectrum as well as other bands.

- ***Open Access to Foreign Equipment Markets***: Increased global competition among new and existing equipment suppliers would result in lower prices for consumers and create new marketing opportunities for U.S. manufacturers in foreign markets.

To maximize these potential benefits, the Commission should strive to adopt a band plan that is consistent with one of the scenarios identified by WP 8F in its revised draft of ITU Recommendation M. 1036-1, which addresses possible frequency arrangements for the 2500-2690 MHz band to accommodate IMT-2000 mobile services.[27] The draft recommendation lists seven possible band plan scenarios, most of which include a combination of FDD and TDD frequency blocks. Moreover, three of the scenarios (Scenarios 1, 2 and 3) incorporate an FDD spectrum pairing separated by a "core" frequency block that would consist of TDD and/or additional FDD spectrum.[28] Most notably, all of the scenarios consider the deployment of only lower power operations in the 2500-2690 MHz band. Although the draft ITU recommendation does not specify bandwidths for these scenarios or take into account incumbent wireless services—as the Commission must—it provides a good indication of likely future international frequency arrangements in the 2500-2690 MHz band, and thus offers valuable guidance regarding harmonization as the Commission considers various plans to reconfigure this band. The Commission should therefore use this draft recommendation as a tool to assess the harmonization potential of proposed band plans for the 2500-2690 MHz spectrum.

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[27] *See* ITU WP 8F Document 8/1023-E, *Draft Revision of Recommendation ITU-R M. 1036-1: Frequency Arrangements for Implementation of the Terrestrial Component of International Mobile Telecommunications-2000 (IMT-2000) in the Band 806-960 MHz, 1710-2025 MHz, 2110-2200 MHz and 2500-2690 MHz* (Feb. 28, 2003).

[28] *See id*. at 9. Scenario 1 would designate the entire core for TDD operations; Scenario 2 would designate the entire core as an external FDD downlink band; and Scenario 3 would divide the core between FDD and TDD operations. *See id*. These scenarios would be subject to appropriate guard bands to minimize potential interference issues.

III. RECOMMENDED FEATURES OF A NEW BAND PLAN FOR THE 2500-2690 MHZ BAND

Any reconfiguration of the 2500-2690 MHz band must balance a number of competing factors. The new band plan should provide adequate regulatory certainty to enable the commercial success of licensees in the band, while providing licensees with sufficient flexibility to deploy new and innovative technologies. Moreover, the new licensing rules must allow licensees to successfully utilize the mobile allocation that the Commission added to this band in 2001. The *NPRM* notes that most MDS operators and a substantial proportion of ITFS would like to deploy lower power, cellularized two-way systems because they are "can support provision of high-data-rate services to a large number of subscribers, can help overcome obstacles to line-of-sight service, and can more readily support mobile or portable services."[29] It further notes that "interference issues have severely limited licensees' ability to deploy low power services" to date.[30] The new band plan should therefore minimize the potential for interference to lower power mobile operations in the band, while preserving technology neutrality to allow licensees to implement technologies most suited to their requirements.

With these considerations in mind, Motorola recommends that any proposed band plan should incorporate the following key features:

A. Appropriate Power Limits

The new licensing rules should focus on promoting low power operations in the 2500-2690 MHz band while accommodating existing high power video instruction services and providing a transition to lower power operations over time. The Commission should adopt

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29 *NPRM* ¶ 26.

30 *Id*.

limits on signal strengths that will allow deployment of low power cellularized operations. Motorola recognizes the need to accommodate services that are currently being delivered via high-power systems. These services could either be provided via low power operations pursuant to a reasonable transition plan, or continue being delivered via high power systems in areas, such as rural areas, where capacity requirements are not as great and it is economically inefficient to provide low power services.

B. Contiguous Spectrum Blocks

To maximize flexibility and efficient use of the 2500-2690 MHz band, the reconfigured 2500-2690 MHz band plan should include large contiguous spectrum blocks. Both the Coalition proposal and the *NPRM* recognize that the existing channelization structure—which was implemented in the 1960s when television technology precluded the use of adjacent channels—prevents efficient use of the spectrum.[31] Indeed, the present interleaving arrangement is one of the primary causes of interference that presently is limiting low power mobile operations in the band.[32] Moreover, interleaving, in combination with existing interference protection rules, has effectively stymied the deployment of broadband services in this spectrum.[33] A band plan that reconfigures the 2500-2690 MHz band into contiguous spectrum blocks would therefore substantially reduce the potential for harmful interference and allow licensees greater flexibility in deploying innovative wireless services. Contiguous spectrum would also enable more efficient operation of spread spectrum technology.[34] Furthermore, large contiguous blocks would allow the Commission to make spectrum

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31 *See NPRM* ¶ 48.

32 *See id*.

33 *See id*.

34 *See id*.

assignments that provide the highest level of technological neutrality and would facilitate the deployment of broadband services.

C. Accommodation of FDD Operations

A reconfigured 2500-2690 MHz band should facilitate the development of mobile services by accommodating FDD operations. Motorola believes that FDD technology will be the primary enabling technology for IMT-2000 because it is well suited to high mobility, wide area applications.[35] The new band plan for the 2500-2690 MHz spectrum therefore should accommodate FDD technology. If the Commission were to designate paired spectrum for FDD operations, the spectrum pairing should provide an adequate duplex gap to minimize the size and cost of the duplex filters needed in portable handsets.[36] Current studies in the 3G Partnership Project indicate that a duplex gap on the order of 30 MHz is necessary.[37] In addition, the Commission should adopt the conventional duplex arrangement in order to minimize equipment design issues, facilitate the development of multi-mode equipment, and lower equipment costs for consumers.[38] In this regard, Motorola supports the Coalition proposal that, for FDD use, the lower band segment be restricted to subscriber-to-base communications and the upper band segment be restricted to base-to-subscriber communications.[39]

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35 *See* Reply Comments of Motorola, Inc., ET Docket No. 00-258, Mar. 9, 2001, at 9 ("Motorola Comments"); Comments of the Telecommunications Industry Association, ET Docket No. 00-258, Feb. 22, 2001, at 15 ("TIA Comments").

36 *See* TIA Comments at 16-17.

37 *See* 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Feasibility Study Considering the Viable Deployment of UTRA in Additional and Diverse Spectrum Arrangements (Release 6), 3GPP TR 25.889 V1.3.0, § 7.3.5 (Feb. 2003).

38 *See* Comments of Motorola, Inc., WT Docket No. 02-353, Feb. 7, 2003, at 7.

39 *See NPRM* ¶ 142.

D. Adequate Guard Bands Between FDD and TDD Operations

Significant guard bands would be necessary to segregate FDD and TDD operations to prevent harmful interference to FDD operations. Contributions to WP 8F indicate that these guard bands would need to be on the order of 10 MHz, even if other measures are taken to minimize interference from TDD base station transmissions.[40] Motorola recommends that a guard band of at least 10 MHz would be required between an FDD uplink (mobile transmit) band and TDD spectrum. Similar guard bands would also be necessary between TDD operators unless the TDD systems are very closely coordinated.[41] Such guard bands would need to be no smaller than the guard band required between FDD and TDD systems. The requirement for significant guard bands between FDD and TDD systems reinforces the need to restructure the 2500-2690 MHz band, eliminate interleaved spectrum and provide licensees large contiguous blocks of spectrum.

E. Harmonization with Anticipated Global Use of the 2500-2690 MHz Band

Any new band plan should maximize the potential benefits to U.S. consumers from harmonization of the U.S. licensing rules for the 2500-2690 MHz band with global uses of this spectrum. This can be best achieved by adopting a band plan that is modeled on one of the scenarios under consideration by WP 8F. If the Commission were to adopt a band plan with designated paired spectrum for FDD operations, Motorola notes that three of the ITU scenarios (Scenarios 1-3) include paired FDD spectrum with an adequate duplex gap.

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[40] *See* Comments of Motorola, Inc., ET Docket No. 00-258, Oct. 22, 2001, at 16; TIA Comments at 16.

[41] *See* TIA Comments at 9.

F. Geographic Area Licensing

New licensing rules should incorporate a consistent geographic licensing approach for all services in the band. As the Commission has recognized in other proceedings, geographic area licensing provides significant advantages over site-based licensing for wide area, mobile services.[42] For example, geographic area licensing provides licensees with greater operational flexibility while avoiding the administrative burdens associated with site-based licensing.[43] This approach would greatly facilitate the deployment of mobile services in the band. Motorola opposes unlicensed use of unassigned ITFS spectrum in this band on a primary basis.[44] In its white paper on spectrum policy Motorola described why spectrum below 3.7 GHz is needed for licensed commercial mobile uses and that future unlicensed uses should be accommodated in higher bands.[45] Accordingly, Motorola opposes making spectrum in the 2500-2690 MHz band generally available for unlicensed use, and instead supports the continuation of only licensed operations in this spectrum.

G. Open Eligibility

Eligibility restrictions should be omitted from new licensing rules to maximize flexibility and allow the most efficient use of the spectrum. Motorola agrees with the Commission's preliminary assessment that opening eligibility to cable providers would not have a significant effect on concentration in video markets, given that MDS has not proven to

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42 *See NPRM* ¶ 62.

43 *See id*.; *see also id*. ¶ 31 n.84.

44 *See NPRM* ¶¶ 79-82.

45 Motorola, Inc., A White Paper on Future Federal Communications Commission Spectrum Policy, ET Docket No. 02-135, Aug. 30, 2002, at 14-17.

be a viable alternative to cable and direct broadcast satellite services. As noted above, the number of MDS subscribers in the U.S. has experienced a marked decline since June 2001.

IV. MOTOROLA OPPOSES ALLOWING UNLICENSED UNDERLAY OPERATIONS IN THE 2500-2690 MHZ BAND

Motorola opposes allowing unlicensed operations in the 2500-2690 MHz band by means of an "underlay" licensing scheme. Such an approach would introduce new sources of interference and create a more uncertain interference environment at the expense of licensees in the band that are seeking to deploy new services. As Motorola has previously stated, creating an unlicensed underlay would significantly increase the potential for unanticipated interference, which would have the result of limiting innovation and deterring licensees and manufacturers from investing in new technologies.[46] In this regard, Motorola notes that the "interference temperature" concept, which the Spectrum Policy Task Force offered as a means of allowing underlay secondary use, raises complex technical problems and this concept is far from being ready for routine deployment in the real world as a reliable spectrum management tool.[47] Moreover, underlay use is particularly problematic in spectrum where mobile operations exist or are contemplated.[48] Indeed, "due to the dynamic nature of mobile operations, there is no readily apparent technological solution that would enable unlicensed secondary use without causing harmful interference to licensed services."[49] Therefore, Motorola opposes allowing any unlicensed underlay use in the 2500-2690 MHz band, which is likely to be use largely for

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46 *See* Comments of Motorola, Inc. ET Docket No. 03-65, July 21, 2003, at 5 ("Motorola Receiver Standards NOI Comments").

47 *See* Comments of Motorola, Inc. ET Docket No. 02-135, Jan. 27, 2003, at 13 ("Motorola Spectrum Policy Task Force Comments").

48 *See* Comments of Motorola, Inc. ET Docket No. 02-380, Apr. 17, 2003, at 5.

49 *Id*.

mobile services.[50] Any unlicensed use of this spectrum can instead be achieved through secondary market arrangements.[51]

Furthermore, it would be particularly inappropriate to allow unlicensed operations in the 2500-2690 MHz band, and the associated increased potential for interference, given the fact that "interference issues have severely limited licensees' ability to deploy low power services" to date.[52] The Commission therefore should be seeking ways to reduce the potential for interference to mobile operations in the 2500-2690 MHz band, not ways of introducing new interference sources into this spectrum.

V. CONCLUSION

For the foregoing reasons, Motorola strongly supports the Commission's efforts to reconfigure the 2500-2690 MHz band. More coherent licensing rules would promote competition, innovation and investment in innovative mobile services. Motorola recommends that new licensing rules should focus on promoting low power operations in the band while accommodating existing high power video instruction services and providing a transition to lower power operations over time. The Commission should also establish contiguous spectrum blocks, accommodate FDD operations, and adopt adequate guard bands to minimize the potential for harmful interference to low power operations. Finally, the Commission should seek to harmonize its new licensing rules with proposed band plans being considered by the ITU.

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50 *See NPRM* ¶ 123.

51 *See* Motorola Receiver Standards NOI Comments at 5-6; Motorola Spectrum Policy Task Force Comments at 25-26.

52 *NPRM* ¶ 26.

Respectfully submitted,

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